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Quasi-isometries and isoperimetric inequalities in planar domains.

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We consider the stability of isoperimetric inequalities under quasi-isometries between Riemann surfaces. Kanai observed that quasi-isometries preserve isoperimetric inequalities on complete Riemannian manifolds with finite geometry: positive injectivity radius and Ricci curvature bounded from below (see [2]). In [1], it is shown that the linear isoperimetric inequality is a quasi-isometric invariant for planar Riemann surfaces (genus zero surfaces) with vanishing injectivity radius. Moreover, it is proved that non-linear isoperimetric inequalities can only hold for Riemann surfaces with positive injectivity radius, and hence, by Kanai's observation, preserved by quasi-isometries. In this talk we present an overview on isoperimetric inequalities and give some of the ideas of the proofs of the results cited above.

Keywords: Riemann surface, isoperimetric inequality, quasi-isometry

Mathematics Subject Classification 2000: 30F45, 30F20 La clasificación es del 2010 (no del 2000)!!!!

References

[1] A. Cantón, A. Granados, A. Portilla, J.M. Rodríguez. Quasi-isometries and isoperimetric inequalities in planar domains. Accepted for publication in *J. Math. Soc. Japan*, 2013.

[2] M. Kanai. Rough isometries and combinatorial approximations of geometries of non-compact manifolds. *J. Math. Soc. Japan* **37**(n. 3), 391–413, 1984.

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